

### **REMARKS**

Claims 1-5 are pending in the present application. It is respectfully submitted that this Response is fully responsive to the Office Action dated April 5, 2006.

#### **Claim Rejections**

Claims 1, 2 and 4 were rejected under 35 U.S.C. §103 as being unpatentable over *Cheng et al.* (U.S. Publication No. 2004/0266122, hereinafter "*Cheng*") in view of *Xiang et al.*, (U.S. Patent No. 6,555,439 hereinafter "*Xiang*"). However, in view of the following remarks, Applicants request that the Examiner withdraw the obviousness rejections allow these claims.

In rejecting these claims, the Examiner acknowledged that *Cheng* fails to teach a "*diffusion suppressive element for suppressing diffusion of an impurity contained in said third impurity-diffused region*". Yet, the Examiner concluded that it would have been obvious to combine the second impurity-diffused region 18 containing a diffusion suppressive element (arsenic) teaching of *Cheng* with "*diffusion suppressive element for suppressing diffusion of an impurity contained in said third impurity-diffused region*". However, Applicants respectfully disagree with the Examiner's conclusion regarding this claim element.

The mere fact that references can be modified does not render the resultant modification obvious unless the prior art also suggests the desirability of the modification. Here, the modification suggested by the Examiner is not obvious because the *Cheng* reference does not suggest the desirability of the modification. For instance, *Cheng* does not suggest suppressing diffusion of an impurity in the third impurity-diffused region. Instead, *Cheng* suffers the

problems discussed on pages 2 and 3 of the above-identified application, e.g., enhanced lateral diffusion into the first impurity-diffused region.

Furthermore, the Examiner acknowledged that *Cheng* does not teach that the third impurity-diffused region has a higher impurity-concentration than the first impurity-diffused region. Yet, the Examiner asserted that this is a well known processing variable and that the discovery of the optimum or workable range involves only routine skill in the art. However, Applicants respectfully disagree with the Examiner's conclusion regarding this claim element.

As discussed above, to set forth *a prima facie* obviousness case, evidenced motivation must be provided indicating why one skilled in the art would be motivated to modify an existing reference. Here, the Examiner has not presented any line of reasoning as to why one would have been motivated to modify the structure so that *the third impurity-diffused region has a higher impurity-concentration than the first impurity-diffused region*, and Applicants know of none. Instead, the examiner's assertion "that this is a well known processing variable" is merely a conclusion, rather than a reason.

As discussed in the January 2006 Amendment, in *Cheng*, the dopant concentration of the LDD region 8 is  $1 \times 10^{18} - 1 \times 10^{22}/\text{cm}^3$  (stated in [0021]), the dopant concentration of the source/drain region 18 is  $1 \times 10^{20} - 1 \times 10^{22}/\text{cm}^3$  (stated in [0025]), and the dopant concentration of the graded source/drain region 24 is  $1 \times 10^{15} - 1 \times 10^{18}/\text{cm}^3$  (stated in [0031]). The Examiner stated that the LDD 8 region is a first impurity-diffused region of the present invention, that the source/drain region 18 is a second impurity-diffused region of the present invention, and that the graded source/drain region 24 is a third impurity-diffused region of the present invention.

However, according to the Examiner's characterization of *Cheng*, the dopant concentration of the third impurity-diffused region is clearly lower than that of the first impurity-diffused region.

In view of the above remarks, Applicants conclude that *Cheng* does not render the claimed invention obvious because the reference does not provide any motivation or suggestion to modify the reference to include a *diffusion suppressive element* and/or a third impurity-diffused region *with a higher impurity-concentration* than a first impurity-diffused region. Accordingly, Applicants respectfully request that the Examiner withdraw the obviousness rejection of these claims.

Furthermore, as discussed in the January 2006 Amendment, even if one were to combine the cited references, the resultant combination would not be the present invention. For example, *Cheng* fails to disclose a first impurity-diffused region formed, as being aligned with said gate. Therefore, even assuming that the LDD 8 region is a first impurity-diffused region; the LDD region is not aligned with the gate electrode 4. (See Figs. 1-6).

In view of the above remarks, Applicants respectfully request that the Examiner withdraw the obviousness rejections of claims 1, 2, and 4.

Claim 3 was rejected under 35 U.S.C. § 103(a) as unpatentable over *Cheng* in view of *Kim et al.* (US Patent No. 6,275,906) and claim 5 was rejected under 35 U.S.C. §103(a) as unpatentable over *Cheng* in view of *Hayashida et al.* (US Pat No. 5,6903,029). However, claims 3 and 5 depend from independent claim 1 and are likewise allowable by nature of dependency. Accordingly, Applicants respectfully request that the Examiner allow these claims.

In view of the aforementioned remarks, Applicants submit that the claims are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,  
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